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Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 Twelfth Street, SW
Washington, DC 20554

Re: *Amendment of Parts 1, 21, 73, 74 and 101 of the Commission's Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands* – WT Docket No. 03-66 –
WRITTEN EX PARTE PRESENTATION

Dear Ms. Dortch:

I am writing on behalf of the Wireless Communications Association International, Inc. ("WCA") to ask the Commission to confirm certain interpretations of Section 27.1221 of the Commission's Rules – the "height benchmarking" rule. Recent discussions within WCA working groups have revealed the potential for confusion over the mathematics for calculating the height benchmark for any given base station and the obligations of licensees when cochannel interference occurs. Failure to provide the requested clarification will inevitably result in thorny disputes among licensees, and could result in disruptions to broadband service being provided consumers. To assist the Commission in providing the requested confirmation, Attachment A incorporates proposed revisions to Section 27.1221.[1]

[1] Although the Commission could do so earlier, as a practical matter WCA anticipates that the requested confirmation will be made at the same time the Commission rules on WCA's petition for reconsideration of the *Third Memorandum and Order* that is pending in the above-referenced proceeding. In that petition, WCA has, among other things, proposed specific rules that will assure that service to subscribers is not interrupted when facility modifications are mandated under Section 27.1221. The language in Attachment A includes not just the revisions necessary to address the subject of this correspondence, but also incorporates the revisions that WCA proposed in its pending petition for reconsideration. *See* Petition of Wireless Communications Ass'n Int'l for Reconsideration, WT Docket No. 03-66, at 1-3 (filed June 19, 2007). It is worth noting that those proposals were not opposed by any part to the proceeding, and were supported by others. *See, e.g.*, Comments and Consolidated Opposition of Sprint Nextel Corp. to Petitions for Reconsideration, WT Docket No. 03-66, at 2 n.2 (filed Aug. 18, 2006); Comments of WiMAX Forum on Petitions for Reconsideration, WT Docket No. 03-66, at 3-4 (filed Aug. 18, 2006).

The height benchmarking concept has its genesis in the Coalition Proposal submitted by WCA, the National ITFS Association ("NIA") and the Catholic Television Network ("CTN") that commenced this proceeding.[2] In crafting an approach that would provide licensees with maximum technology flexibility, WCA, NIA and CTN were challenged to address the potential for cochannel interference when a base station in one Geographic Service Area ("GSA") transmits on a given channel at the same time a base station in a proximate GSA is receiving signals from subscribers on the same channel, which can happen under certain technology deployment scenarios.[3] To address that risk, WCA, NIA and CTN developed a novel solution that balanced the promotion of flexibility against the need to assure licensees sufficient interference protection – the height benchmarking concept.[4] The Coalition Proposal was grounded in a mathematical formula for establishing safe harbor heights for each pair of base station transmission and reception antennas, called the height benchmark. Under that proposal, the regulatory consequences that flow when interference occurs between two base stations depends on whether each station is within, or exceeds, its height benchmark.[5]

The Coalition Proposal's advocacy of height benchmarking proved non-controversial – no party responding to the *Notice of Proposed Rulemaking* opposed the height benchmarking proposal, and many endorsed it.[6] Not surprisingly, then, the Commission's 2004 *Report and Order* in this docket adopted the concept and codified it as Section 27.1221 of the Commission's Rules.[7] Although Section 27.1221 did not include all the myriad details of the Coalition Proposal, to date industry conduct has been consistent with the Coalition Proposal. However, as newcomers begin to enter the 2.5 GHz band and system deployment otherwise accelerates, there

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[2] On October 7, 2002, WCA, NIA and CTN submitted "A Proposal For Revising The MDS And ITFS Regulatory Regime," Wireless Communications Ass'n Int'l, Nat'l ITFS Ass'n and Catholic Television Network, RM-10586 (filed Oct. 7, 2002) ["Initial Coalition Proposal"]. Subsequent to October 7, 2002, WCA, NIA and CTN submitted two supplements that addressed issues left open in the original white paper and sought to clarify points that apparently had been misunderstood by some parties within the industry. *See* "First Supplement To 'A Proposal For Revising The MDS And ITFS Regulatory Regime,'" RM-10586 (filed Nov. 14, 2002) ["First Coalition Supplement"]; "Second Supplement To 'A Proposal For Revising The MDS And ITFS Regulatory Regime,'" RM-10586 (filed Feb. 7, 2003) ["Second Coalition Supplement"]. It was the Second Coalition Supplement in which the height benchmarking concept was first introduced. For simplicity's sake, unless the context requires a different meaning, references to the "Coalition Proposal" should be read to reference the combination of the three filings.

[3] *See* Initial Coalition Proposal at 24, 27-28.

[4] *See* Second Coalition Supplement at 3-7.

[5] *See id.* at 5-7.

[6] *See* Reply Comments of Wireless Communications Ass'n Int'l, Nat'l ITFS Ass'n and Catholic Television Network, WT Docket No. 03-66, at 12 n.27 (filed Oct. 23, 2003) (listing commenting parties that supported the Coalition Proposal's approach to addressing cochannel interference).

[7] *See Amendment of Parts 1, 21, 73, 74 and 101 of the Commission's Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Band*, Report and Order and Further Notice of Proposed Rulemaking, 19 FCC Rcd 14165, 14213 (2004) ["*Report and Order*"].

is a risk that certain components of the Coalition Proposal endorsed by the Commission but not specifically incorporated within Section 27.1221 will be lost over time. Thus, WCA is submitting this request.

First, Section 27.1221 defines the height benchmark as "$h_{(b)}= D^2/17$", without specifying any units of measure for the height or the distance. The Coalition Proposal embraced by the *Report and Order* had specified that a base station would be within its height benchmark if its height *in meters* did not exceed distance *in kilometers* squared, divided by 17.[8] Although WCA understands that all of the major system operators, consulting engineers and software developers involved in the 2.5 GHz band are calculating the height benchmarks as contemplated by the Coalition Proposal, there is a risk that someone may assume that height and distance are to be measured using a single unit of measure. If one were to utilize the same unit of measure for both the height and the distance, the height benchmark for a given station would be 1,000 times that intended by the Coalition Proposal and the Commission, effectively gutting Section 27.1221 of any effect.[9] To avoid future disputes over the calculation of base stations' height benchmarks, WCA urges the Commission to clarify its intent to measure height in meters and distance in kilometers as proposed by WCA, NIA and CTN, and modify Section 27.1221 to specifically identify the units of measurement to be used in calculating the height benchmark for a given base station.

Second, the language of Section 27.1221 contains a possible ambiguity as to how the distance component of the height benchmarking formula is to be calculated. The height benchmark is defined for pairs of base stations[10] and according to Section 27.1221(b), D^2 is "the distance squared between the station and the GSA service area boundary measured along the radial between the respective stations."[11] Thus, it is clear from the language of Section 27.1221 that where the two base stations are in GSAs that share a common border through with the radial between the two stations passes, D is the distance from the base station at issue to that common boundary. What, however, of those cases where the radial between two base stations does not pass through a common GSA boundary – does one calculate a station's height benchmark based on the distance to its own GSA boundary, or to that of the other station? The Coalition Proposal embraced by the *Report and Order* had clearly specified that in such cases, the distance to be utilized in calculating a given station's height benchmark was to be the distance between the base station and the nearest boundary of the other station's GSA along the radial between the two base stations.[12] Thus, the Commission should confirm that it intended for the calculation of the

[8] *See* Second Coalition Supplement at 5.

[9] WCA understands that the software utilized by the major consulting firms and by the larger system operators in the band all calculate height benchmarks in accordance with the intent behind the Coalition Proposal and the *Report and Order*.

[10] *See* 47 C.F.R. § 27.1221(b).

[11] *Id.*

[12] *See* Second Coalition Supplement at 5. Specifically, WCA, NIA and CTN stated that:

distance component in such cases to be in accord with the Coalition Proposal, and modify Section 27.1221 accordingly.

Finally, although Section 27.1221 of the Rules provides clarity as to the obligation of licensees where the victim base station is within its height benchmark and the interfering base station exceeds its height benchmark, it does reflect the WCA-NIA-CTN intent that in other circumstances licensees should be obliged to cooperate with one another to address cochannel interference.[13] As the Coalition Proposal noted, the height benchmarking approach "is intended to give licensees incentive to design their systems so that base station transmission and reception antennas are not prone to cause or suffer interference, while at the same time permitting licensees the flexibility to build facilities outside safe harbors within the framework of a cooperative coordination regime."[14] To assure that Section 27.1221 is not interpreted in the future to avoid a need for licensee cooperation, WCA suggests that Section 27.1221 be modified as set forth in Attachment A.

- To determine whether a base station transmission antenna causing interference to another base station is within its safe harbor, the transmission antenna causing the interference will be considered within its safe harbor if the height in meters of the antenna's centerline above the average elevation along the radial directly towards the base station receiving the interference is equal to or less than $D^2/17$ (where D is the distance in kilometers between the base station causing the interference and the point on that radial that intersects the boundary of the GSA of the station receiving the interference).
- To determine whether a base station reception antenna suffering interference from another base station is within its safe harbor, the reception antenna suffering the interference will be considered within its safe harbor if the height in meters of the antenna's centerline above the average elevation along a radial directly towards the base station causing the interference is equal to or less than $D^2/17$ (where D is the distance in kilometers between the base station suffering the interference and the point on that radial that intersects the boundary of the GSA of the station causing the interference).

WCA, NIA and CTN reiterated the point later in the proceeding, when it stated that "a station is deemed within its safe harbor if the height in meters of the antenna's centerline above the average elevation along the radial directly towards the base station receiving the interference is equal to or less than $D^2/17$ (where D is the distance in kilometers between the base station causing the interference and the point on that radial that intersects the boundary of the GSA of the station receiving the interference)." Comments of Wireless Communications Ass'n Int'l, Nat'l ITFS Ass'n and Catholic Television Network, WT Docket No. 03-66, at 47 (filed Sept. 8, 2003).

[13] *See* Second Coalition Supplement at 6.

[14] *Id.* at 4.

Pursuant to Section 1.1206(b)(1), this notice is being filed electronically with the Commission via the Electronic Comment Filing System for inclusion in the public record of the above-reference proceeding. Should you have any questions regarding this presentation, please contact the undersigned.

Respectfully submitted,

/s/ *Paul J. Sinderbrand*

Paul J. Sinderbrand

Counsel to the Wireless Communications Association International, Inc.

cc: Fred Campbell
Joel Taubenblatt
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§27.1221 Interference Protection.

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(b) *Height Benchmarking*. Height benchmarking is defined for pairs of base stations, one in each of two proximate geographic service areas (GSAs). The height benchmark in meters (hb_m) for a particular base station relative to a base station in another GSA is equal to the distance in kilometers between that base station and the nearest boundary of the GSA of the other base station measured along the radial between the respective stations, squared (D_{km}^2) and then divided by 17. That is, $hb_{(m)} = D_{km}^2/17$. A base station antenna will be considered to be within its applicable height benchmark relative to another base station if the height in meters of its centerline of radiation above average elevation (HAAE) calculated along the straight line between the two base stations in accordance with Sections 24.53(b) and (c) of this chapter does not exceed the height benchmark (hb_m), *i.e.* does not exceed $D_{km}^2/17$. A base station antenna will be considered to exceed its applicable height benchmark relative to another base station if the HAAE of its centerline of radiation calculated along the straight line between the two base stations in accordance with Sections 24.53(b) and (c) of this chapter exceeds the height benchmark (hb_m).

(c) *Protection for Receiving Antennas not Exceeding the Height Benchmark.* Absent agreement between the two licensees to the contrary, if a transmitting antenna of one BRS/EBS licensee's base station exceeds its applicable height benchmark and such licensee is notified by another BRS/EBS licensee that it is generating an undesired signal level in excess of -107 dBm/5.5 MHz at the receiver (*i.e.* after the reception antenna and line) of a co-channel base station that is within its applicable height benchmark, then the licensee of the base station that exceeds its applicable height benchmark shall either limit the undesired signal at the receiver of the victim base station to -107dBm/5.5 MHz or less or reduce the height of its transmission antenna to no more than the height benchmark. Such corrective action shall be completed no later than:

(i) 24 hours after receiving such notification, if the base station that exceeds its height benchmark commenced operations after the station that is within its applicable height benchmark; or

(ii) 90 days after receiving such notification, if the base station that exceeds its height commenced operations prior to the station that is within its applicable height benchmark.

For purposes of this section, if the interfering base station has been modified to increase the EIRP transmitted in the direction of the victim base station, it shall be deemed to have commenced operations on the date of such modification.

(d) *No Protection from a Transmitting Antenna not Exceeding the Height Benchmark*. The licensee of a base station transmitting antenna that does not exceed its applicable height benchmark shall not be required pursuant to subsection (c) above to limit that antennas undesired signal level to -107dBm/5.5 MHz or less at the receiver of any co-channel base station.

(e) *No Protection for a Receiving-Antenna Exceeding the Height Benchmark.* The licensee of a base station receive antenna that exceeds its applicable height benchmark shall not be entitled pursuant to subsection (c) above to insist that any co-channel base station limit its undesired signal level to -107dBm/5.5 MHz or less at the receiver.

(f) *Mandatory Cooperation*. Notwithstanding the provisions of subsections (d) and (e) above, where a base station that is within its height benchmark is generating an undesired signal level in excess of -107 dBm/5.5 MHz at the receiver of a co-channel base station that is within its height benchmark, both licensees shall cooperate with each other to mitigate any actual harmful interference.

(g) *Good Faith Cooperation*. Notwithstanding the provisions of subsections (d) and (e) above, where a base station exceeds its height benchmark receives an undesired signal level in excess of -107 dBm/5.5 MHz from the transmitting antenna of a co-channel base station, the licensee of the interfering base station shall cooperate in good faith with the other licensee to mitigate any actual harmful interference. For purposes of this requirement, a good faith obligation to cooperate should not be read to require any licensee to take any action that would reduce or degrade its service or increase its costs by more than a *de minimis* amount.

(h) *Information Exchange*. A BRS/EBS licensee shall provide the geographic coordinates, the height above ground level of the center of radiation for each transmit and receive antenna, and the date transmissions commenced for each of the base stations in its GSA within 30 days of receipt of a request from a co-channel BRS/EBS licensee with an operational base station located in a proximate GSA. Information shared pursuant to this section shall not be disclosed to other parties except as required to ensure compliance with this section.